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a.s.  
PATENT  
Customer No. 22,852  
Attorney Docket No. 01986.0021-01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:

Richard WARREN

Serial No.: 09/216,036

Filed: December 18, 1998

For: METHOD AND SYSTEM FOR  
PREVENTING SUN TRANSIT  
OUTAGES IN POINT-TO-  
MULTIPOINT SATELLITE  
SYSTEMS

)  
)  
) Group Art Unit: 2682

)  
) Examiner: N. Mehrpour

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Sir:

APPEAL BRIEF UNDER 37 C.F.R. § 1.192

In support of its Notice of Appeal filed October 11, 2001, and pursuant to 37 C.F.R. § 1.192, Appellant presents in triplicate his Appeal Brief accompanied by a check in the amount of \$320.00 to satisfy the fee under 37 C.F.R. § 1.17(c) for filing a brief in support of an appeal. This is an appeal to the Board of Patent Appeals and Interferences from a decision finally rejecting claims 1-8. The appealed claims are set forth in the Appendix. If additional fees are required or if the enclosed payment is insufficient, please charge the deficiencies to Deposit Account No. 06-0916. If a fee is required for an extension of time under 37 C.F.R. § 1.136 and such a fee is not accounted for above, Appellant petitions for such an extension and request that the fee be charged to Deposit Account No. 06-0916.

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**I. Real Party Interest**

The real party in interest is DynCorp Information Systems LLC, a limited liability company of Delaware.

**II. Related Appeals and Interferences**

There are no known related pending appeals or interferences directly affected by or having a bearing on the decision in the pending appeal.

**III. Status Of Claims**

Claims 1-8 have been finally rejected. Claims 1-6 and 8 are the subject of this appeal. The claims on appeal are set forth under the heading "APPENDIX." In the Final Office Action dated April 18, 2001, the Examiner rejected claims 1-8 under 35 U.S.C. § 103(a) as being unpatentable over Mallinckrodt (U.S. Patent No. 5,940,753) in view of Bond (U.S. Patent No. 3,836,969).

**IV. Status Of Amendments**

Appellant's Amendment of February 6, 2001 has been entered. Appellant's Amendment of July 10, 2001, has not been entered; however the Examiner indicated in the Advisory Action of August 9, 2001, that the Amendment would be entered upon submission of a Notice of Appeal and Appeal Brief. Accordingly, the claims in the Appendix reflect the status of the claims upon entry of the July 10, 2001 Amendment. No other Amendments have been filed.

**V. Summary Of Invention**

Geostationary satellite communication systems typically include a plurality of satellites orbiting the earth as well as a plurality of earth stations. [Specification, p. 1, lines 15-20] An antenna associated with one of the earth stations generates a communication signal received by one of the satellites, or vice versa. [P.1, lines 20-24]

If the signal sent by the earth station is received by more than one of the satellites, each of the satellites will process the signal as if it were intended for them. [P. 1, lines 25-30] To avoid this problem, the earth station generates a narrow beam communication signal. [P. 1, lines 31-35]

The two most widely used radio frequency bands for generating a narrow beam communication signal are the Ku- and C- bands. [P. 2, lines 1-2] The antenna used with the Ku-band can be relatively small in diameter, but Ku-band signals are susceptible to attenuation in certain atmospheric conditions, such as moderate-to-heavy precipitation. [P. 2, lines 5-10] The antenna used with C-band does not encounter these periodic outages due to atmospheric conditions, but the minimum diameter of a C-band antenna to generate a sufficiently narrow beam is approximately 3.7 meters. [P. 2, lines 15-24] An antenna of this size is not practical for a number of applications. [P. 2, lines 24-26]

Further, for several days surrounding the vernal and autumnal equinoxes, the sun transits behind the satellites for short periods of time each day. [P.2, lines 30-32] The sun's energy can cause interference in the form of radio frequency noise and may render the earth station inoperable during the period of transit. [P.3, lines 4-8] Known solutions for dealing with the sun transit outages include expensive terrestrial communications facilities, remaining off-air during these periods, or switching to a secondary satellite during the outage via repositioning a single antenna by manual or automated means. [P3, lines 15-28] Each of these solutions is disadvantageous, either because it is impractical, not economical, or both.

Systems and methods consistent with the present invention address these and other problems associated with existing geostationary satellite communication systems by providing a mechanism for repositioning an earth station's antenna during a sun transit outage. [P.3, line 32 - P4, line 2] A first satellite antenna generates a wide beam communication signal to illuminate a plurality of satellites. [P.4, lines 5-8] A second satellite antenna is configured to receive a return communication signal from only one of the plurality of satellites. [P.4, lines 10-11] In one embodiment, a satellite antenna repositioning system repositions the second satellite antenna to receive a return communication signal from an alternate satellite from the plurality of illuminated satellites when the sun transits within the beamwidth of the second antenna. [P.4, lines 11-13; P. 8, lines 15-20] In a second embodiment, a third satellite antenna is configured to receive a return communication signal from an alternate satellite proximate to the satellite from which the second satellite antenna receives a return communication signal. [P. 8, lines 22-29.] When the sun transits within the beamwidth of the second antenna, a selector switch may switch from the second antenna to the third antenna.

## **VI. Issues**

The issue in this Appeal Brief is:

Whether the Examiner's rejections of claims 1-6 and 8 under 35 U.S.C. § 103(a) as being unpatentable over Mallinckrodt in view of Bond can be affirmed when neither reference teaches or suggests a "satellite antenna repositioning system for repositioning said second antenna," neither reference teaches or suggests a "third satellite antenna," and further, there is no motivation to combine the references.

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## **VII. Grouping Of Claims**

In the claims on appeal, claims 1, 3, 5, 6 and 8 are the independent claims. The claims on appeal do not stand or fall together. These claims should be considered in four groups.

Group I: 1, 2, and 5;

Group II: 3, 4, 6, and 8;

The claims have been placed in these groups due to their common subject matter. However, Appellant has addressed the outstanding rejections in sections based on the rejections themselves, instead of this grouping.

Claim 1 is drawn to a satellite communication system including a first satellite antenna for generating a wide beam communication signal to illuminate a plurality of satellites, means for generating a return communication signal from each of the plurality of satellites, and a second satellite antenna for receiving the communication signal from only one of the plurality of satellites and a satellite antenna repositioning system for repositioning the second antenna when the sun transits within the beamwidth of the second antenna. Claim 2 depends on Claim 1 and is drawn to the relative sizes of the first and second antennas. Claim 5 is drawn to a method that performs operations similar to the operations associated with claim 1.

In contrast, claim 3 is drawn to a satellite communication system including a first satellite antenna for generating a wide beam communication signal to illuminate a plurality of satellites, means for generating a return communication signal from each of the plurality of satellites, a second satellite antenna, directed to a first one of the plurality of satellites, for receiving the return communication signal from the first satellite, and a third satellite antenna directed to a second one of the plurality of satellites located

proximate to the first satellite, for receiving a return communication signal from the second satellite only during sun transit outages of the second antenna. Claim 4 depends on Claim 3 and is drawn to the relative sizes of the three antennas. Claim 6 is drawn to a method that performs operations similar to the operations associated with the elements of claim 3. Claim 8 is drawn to an earth station configured similarly to the satellite communication system of claim 3.

#### VIII. Argument

Appellant traverses the rejections of claims 1-6 and 8 under 35 U.S.C. § 103(a) as being unpatentable over Mallinckrodt in view of Bond.

##### A. MALLINCKRODT AND BOND, EITHER ALONE OR IN COMBINATION, FAIL TO TEACH OR SUGGEST "A SATELLITE ANTENNA REPOSITIONING SYSTEM FOR REPOSITIONING SAID SECOND ANTENNA"

With respect to claims 1, 2, and 6, the Examiner's position is that, while Mallinckrodt fails to teach a satellite antenna repositioning system for repositioning the second antenna, Bond teaches a satellite antenna repositioning system, and thus, it would have been obvious to one of ordinary skill in the art to combine the teachings of Mallinckrodt and Bond to provide a satellite antenna repositioning system, as is recited in the claims. The Examiner's position, however, is erroneous, because neither Mallinckrodt nor Bond teaches a satellite antenna repositioning system for repositioning the second antenna as recited in the claims, and further still, there is no motivation to combine Mallinckrodt and Bond.

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1. Mallinckrodt Fails to Teach or Suggest "A Satellite Antenna Repositioning System"

The invention recited in claim 1 requires, among other things, "a satellite antenna repositioning system for repositioning said second antenna when the sun transits within the beamwidth of said second antenna." The Examiner correctly acknowledges that Mallinckrodt fails to teach a satellite antenna repositioning system. [Final Office Action, dated April 18, 2001, Paper No. 7, at p. 2.] Thus, Mallinckrodt fails to disclose or suggest all of the elements of claim 1.

2. Bond Also Fails to Teach or Suggest "A Satellite Antenna Repositioning System"

The Examiner looks to Bond to cure the deficiency of the satellite antenna repositioning system in Mallinckrodt. Specifically, the Examiner asserts that Bond "teaches a satellite antenna repositioning system for repositioning the second antenna when the sun transits within the beamwidth of the second antenna." [Final Office Action, p. 3.] Applicant disagrees.

Bond does not teach repositioning a second satellite antenna as is recited in claim 1. Claim 1 recites, among other things, "a satellite antenna repositioning system for repositioning said second antenna." The second antenna, as recited in claim 1, is "a second satellite antenna for receiving the return communication signal from only one of the plurality of satellites." Bond teaches that antennas 36 and 40 "may be provided with a means for reorienting the antenna . . ." [Col. 9, lines 54-56] Neither antenna 36 nor 40 of Bond, however, is a satellite antenna for receiving the return communication signal from only one of the plurality of satellites. In fact, both antenna 36 and antenna

40 are located on the satellites themselves, and thus, cannot possibly receive "return communications signals from only one of the plurality of satellites," as is recited in claim 1. [Col. 9, lines 41-44; Fig. 9] Moreover, claim 1 further recites that the second antenna is repositioned "when the sun transits within the beamwidth of said second antenna." While Bond allegedly discloses sun transit outages, the repositioning of the antennas in Bond is not related to sun transit outages. Rather, in Bond, antennas 36 and 40, located on the satellites themselves, are repositioned to "compensate for the changes in the angle of transmission owing to the change of position of the satellite relative to the ground station antenna." [Col. 9, lines 54-60] Therefore, Bond also fails to disclose or suggest all of the elements of claim 1.

Neither Mallinckrodt nor Bond teaches every element recited in claim 1. The Examiner alleges that Mallinckrodt teaches substantially the recitations of claim 1 except for the "satellite antenna repositioning system." To cure this deficiency, the Examiner contends that Bond teaches a satellite antenna repositioning system, and that it would have been obvious to provide the teaching of Bond to Mallinckrodt, "in order for satellite system to avoid sun transit outage." [sic] [Final Office Action, p. 3.] Because neither Mallinckrodt nor Bond teaches this claim element, however, even the combination of Mallinckrodt and Bond as proposed by the Examiner would fail to teach "a satellite antenna repositioning system for repositioning said second antenna when the sun transits within the beamwidth of said second antenna" as is recited in claim 1.

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### 3. There is No Motivation to Combine Mallinckrodt and Bond

As noted above, the Examiner contends that it would have been obvious to combine the satellite antenna repositioning system of Bond with Mallinckrodt "in order for satellite system to avoid sun transit outage." [sic] [Final Office Action, p. 3.]

This simplistic statement from the Examiner is insufficient to support an obviousness rejection.

To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must provide a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.

*Ex Parte Clapp*, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. & Inter. 1985); M.P.E.P. § 2142.

The Examiner did not point to an express or implied suggestion for the combination of Mallinckrodt and Bond in the references. MPEP § 2143 requires the Examiner to provide a basis for combining references. The Examiner's basis appears to be that "the combined teachings of the references would have suggested [the invention] to those of ordinary skill in the art." [Final Office Action, p. 4]

Applicant submits that a person of skill in the art would not have been motivated to combine Mallinckrodt and Bond. First, although Bond purportedly discloses problems associated with sun transit outages, Bond does not teach a method of avoiding the outages by repositioning a second satellite antenna. In fact, Bond discloses only that multiple, appropriately spaced satellites may be used. [Col. 5, lines 28-32] Bond further does not teach repositioning of a second satellite antenna for any reason, but rather the repositioning of antennas located on satellites. Neither of these teachings would be applicable in view of Mallinckrodt. Second, as described above, neither Bond nor

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Mallinckrodt teach or suggest all of the elements of claim 1. Therefore, contrary to the Examiner's position, it would not have been obvious to combine Mallinckrodt and Bond, because even in doing so, the references would not have suggested the invention.

The Examiner has thus failed to establish a *prima facie* case of obviousness with respect to claim 1. Specifically, the Examiner fails, at least, to show that the prior art references when combined teach or suggest all of the claim limitations. Further, the Examiner fails to provide a sufficient suggestion or motivation to combine Mallinckrodt and Bond. Therefore, Appellant respectfully requests that the Board reverse the rejection of claim 1.

As explained above, claim 5 recites, among other things, the step of repositioning a second satellite antenna, similar to satellite antenna repositioning system found in claim 1. Accordingly, claim 5 is patentable for at least the reasons given with respect to claim 1.

Further, claim 2 is dependent from claim 1. Claim 2 is also patentable, at least by virtue of this dependence.

**B. MALLINCKRODT AND BOND, EITHER ALONE OR IN COMBINATION, FAIL TO TEACH OR SUGGEST A "THIRD SATELLITE ANTENNA"**

With respect to claims 3, 4, 6, and 8, the Examiner's position is that, while neither Mallinckrodt nor Bond explicitly teach a third satellite antenna, the teachings of Mallinckrodt can be extrapolated to include a third satellite antenna. The Examiner offers no further explanation, nor does the Examiner provide a motivation to combine the teachings of Mallinckrodt and Bond to render claims 3, 4, 6, and 8 obvious. The Examiner's position, however, is erroneous, because neither Mallinckrodt nor Bond

teach or suggest a third satellite antenna, as recited in the claims. Further still, there is no motivation to combine Mallinckrodt and Bond.

1. Mallinckrodt Fails to Teach or Suggest "A Third Satellite Antenna"

The invention recited in claim 3 requires, among other things, "a third satellite antenna, directed to a second one of the plurality of satellites located proximate to said first satellite, for receiving said return communication signal from said second satellite only during sun transit outages of said second antenna." The Examiner does not assert that Mallinckrodt teaches a third satellite antenna, as is recited in claim 3. The Examiner, however, does assert that "[t]he reference Mallinckrodt directed to a second antenna of the plurality of satellite located proximate to the first satellite, the same way can direct the a third satellite proximate to the first satellite." [sic] [Final Office Action, p. 4.] Although this statement is only marginally comprehensible, it is presumed that the Examiner is asserting that the second satellite antenna of Mallinckrodt can be extrapolated so as to include a third satellite antenna. Applicant respectfully disagrees.

First, Mallinckrodt does not suggest a third satellite antenna by virtue of the inclusion of a second satellite antenna. Because Mallickrodt does not address sun transit outages, there is no motivation to include an additional antenna in Mallinckrodt to avoid outages. In fact, there is no teaching or suggestion in Mallinckrodt to add another antenna for any reason. Second, claim 3 does not recite merely a third satellite antenna, but rather "a third satellite antenna, directed to a second one of the plurality of satellites located proximate to said first satellite, for receiving said return communication signal from said second satellite only during sun transit outages of said second antenna." Mallinckrodt does not teach or suggest an antenna, directed to a second one

of the plurality of satellites located proximate to said first satellite. In fact, Mallinckrodt does not teach or suggest a plurality of satellites where the notion of "proximate" may be applicable. Finally, Mallinckrodt fails to teach or suggest that the third satellite antenna receives return communication signals from the second satellite only during sun transit outages of said second antenna. Mallinckrodt does not teach or disclose sun transit outages, nor does Mallinckrodt teach or disclose behavior of an antenna related to sun transit outages. Clearly, nothing about the antenna of Mallinckrodt can be used to extrapolate the third satellite antenna, as recited in claim 3. Thus, Mallinckrodt fails to teach all of the elements of claim 3.

## 2. Bond Also Fails to Teach or Suggest "A Third Satellite Antenna"

Bond cannot cure the deficiency of a third satellite antenna in Mallinckrodt. Although Bond addresses sun transit outages, Bond fails to disclose the use of multiple satellite antennas to address the problem, but rather discloses the use of multiple satellites. Therefore, Bond also fails to disclose or suggest all of the elements of claim 3.

Because neither Mallinckrodt nor Bond teach or disclose a third satellite antenna, even the combination of Mallinckrodt and Bond would fail to every element as recited in claim 3.

## 3. There is No Motivation to Combine Mallinckrodt and Bond

As noted above, the Examiner contends that it would have been obvious to combine the satellite antenna repositioning system of Bond with Mallinckrodt "in order for satellite system to avoid sun transit outage." [sic] [Final Office Action, p. 3.] The

Examiner did not point to an express or implied suggestion in the prior art for the combination of Mallinckrodt and Bond.

Applicant submits that a person of skill in the art would not have been motivated to combine Mallinckrodt and Bond. First, although Bond purportedly discloses problems associated with sun transit outages, Bond does not teach a method of avoiding the outages by utilizing a third satellite antenna. In fact, Bond discloses only that multiple, appropriately spaced satellites may be used. [Col. 5, lines 28-32] Second, as described above, neither Bond nor Mallinckrodt teaches or suggests all of the elements of claim 3. Therefore, contrary to the Examiner's position, it would not have been obvious to combine Mallinckrodt and Bond, because even in doing so, the references would not have suggested the invention.

The Examiner has thus failed to establish a *prima facie* case of obviousness with respect to claim 3. Specifically, the Examiner fails, at least, to show that the prior art references when combined teach or suggest all of the claim limitations. Further, the Examiner fails to provide a sufficient suggestion or motivation to combine Mallinckrodt and Bond. Therefore, Appellant respectfully requests that the Board reverse the rejection of claim 3.

As explained above, claim 6 recites, among other things, "aligning a third satellite antenna to receive the return signal from a second one of the plurality of satellites," similar to third satellite antenna found in claim 3. Accordingly, claim 6 is patentable for at least the reasons given with respect to claim 3.

Further, claim 4 is dependent from claim 3. Claim 4 is also patentable, at least by virtue of this dependence.

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Claim 8 also recites, among other things, three satellite antennas, similar to those recited in claim 3--namely a small satellite antenna for transmitting a wire beam communication signal, a first large satellite antenna directed to a first one of the plurality of adjacent geostationary signals, and a second large satellite antenna directed to a second one of the plurality of adjacent geostationary signals. Thus, claim 8 is patentable for at least the reasons given with respect to claim 3.

**IX. CONCLUSION**

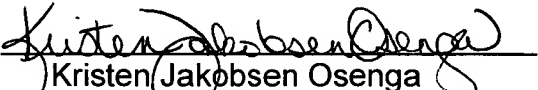
In view of the foregoing, it is respectfully submitted that the final rejection of claims 1-6 and 8 should be reversed, and such reversal is respectfully requested.

To the extent any further extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this Appeal Brief, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 06-0916.

Respectfully submitted,

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Dated: December 11, 2001

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## APPENDIX

1. A point-to-multipoint satellite communication system, comprising:
  - a first satellite antenna for generating a wide beam communication signal to illuminate only a plurality of satellites;
  - means for generating a return communication signal from each of the plurality of satellites;
  - a second satellite antenna for receiving the return communication signal from only one of plurality of satellites; and
  - a satellite antenna repositioning system for repositioning said second antenna when the sun transits within the beamwidth of said second antenna.
2. The system of claim 1, wherein a diameter of the second directional satellite antenna is greater than the diameter of the first satellite antenna.
3. A point-to-multipoint satellite communication system, comprising:
  - a first directional satellite antenna for generating a wide beam communication signal to illuminate a plurality of satellites;
  - means for generating a return communication signal from each of the plurality of satellites;
  - a second satellite antenna, directed to a first one of the plurality of satellites, for receiving said return communication signal from said first satellite; and

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a third satellite antenna, directed to a second one of the plurality of satellites located proximate to said first satellite, for receiving said return communication signal from said second satellite only during sun transit outages of said second antenna.

4. The system of claim 3, wherein a diameter of the second and third satellite antennas are greater than a diameter of the first satellite antenna.

5. A method of performing satellite in a point-to-multipoint communications system, comprising the steps of:

aligning a first satellite antenna to illuminate a plurality of satellites;

transmitting a communication signal from the first satellite antenna to said plurality of satellites;

broadcasting a return signal from each of said plurality of satellites based on the communication signal;

aligning a second satellite antenna to receive the return signal from only a first one of the plurality of satellites;

repositioning said second satellite antenna to receive the return signal from only a second of the plurality of satellites during periods when the sun transits behind said first satellite; and

receiving the return signal from said second satellite at said second satellite antenna during said periods.

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6. A method of performing satellite communication in a point-to-multipoint communication system, comprising the steps of:

aligning a first antenna to illuminate a plurality of satellites;

transmitting a communication signal from said first antenna to the plurality of satellites;

broadcasting a return signal from each of the plurality of satellites in response to the communication signal;

aligning a second antenna to receive the return signal from a first one of the plurality of satellites;

receiving the return signal from said first satellite at said second antenna when the sun is outside the beamwidth of said second antenna;

aligning a third antenna to receive the return signal from a second one of the plurality of satellites; and

receiving the return signal from said second satellite with said third antenna when the sun is within the beam width of said first satellite.

8. An earth station for use in a point-to-multipoint communication system including a small satellite antenna for transmitting a wide beam communication signal and a plurality of adjacent geostationary satellites for retransmitting the communication signal from the small satellite antenna, the earth station comprising;

a first large satellite antenna directed to a first one of the plurality of adjacent geostationary satellites;

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a second large satellite antenna directed to a second one of the plurality of adjacent geostationary satellites; and

a receiver for receiving communication signals at one of the said first and second antennas, said receiver including an antenna switch selector for selectively activating said first and said second antennas, the selector activating the second antenna only during periods when the sun transits within a beamwidth of said first antenna.

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